# STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION PLANS FOR PROPOSED

PROJECT 000P-471 PCN I6X2

US Hwy 212 - Road Closed Sign



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	Plotting Date:	12/15/2022			
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### **ESTIMATE OF QUANTITIES – I6X2**

### Non-Section Method

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
* 009E0010	Mobilization	Lump Sum	LS
* 632E0014	1.75' Diameter Breakaway Support Concrete Footing	12.0	Ft
* 632E1245	W8x21 Steel Post	32.0	Ft
* 632E3113	Extruded Aluminum Sign, Nonremovable Copy High Intensity	108.0	SqFt
* 635E4010	1 Section Vehicle Signal Head	4	Each
* 635E6200	Miscellaneous, Electrical	Lump Sum	LS
* 635E8120	2" Rigid Conduit, Schedule 40	380	Ft
* 635E9020	1/C #10 AWG Copper Wire	800	Ft

\* - Denotes Non-Participating

## SPECIFICATIONS

Standard Specifications for Roads & Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

# **SEQUENCE OF OPERATIONS**

- 1. Trench in conduit & install wire.
- 2. Install sign.
- 3. Make all electrical connections & install switch.
- 4. Restore disturbed area from trenching.

### CONDUIT INSTALLATION

The Contractor will trench and install conduit from power source to metering point and from metering point to sign. See drawings in these plans. Butte REA Inc. is the provider of power and has obtained easement for DOT thru the private property. Butte REA Inc. will provide the meter at the metering point and will provide 120V service ready to connect at the source point.

All costs associated with furnishing and installing 2" sch 40 conduit will be incidental to the contract unit price per foot for "2" Rigid Conduit, Schedule 40"

## SIGN INSTALLATION

The Contractor will install the sign according to the "Erection Details for Two-Post One-Direction Breakaway Sign Supports" drawings pages in these plans. The Contractor will install the beacons, and electrical components according to the "US Hwy 212 Road Closed Sign - Rear View" drawing in these plans.

The two switches with labels can deviate from the drawing in these plans but must be able to serve the same function as the drawing intends. All costs associated with furnishing and installing the flasher relays, two switches with labels, electrical junction box on sign assembly, and 1.5" steel conduit on sign assembly will be incidental to the contract lump sum price for "Miscellaneous Electrical"

The beacons will be amber and will flash in accordance with MUTCD standards. All costs associated with cutting holes for, furnishing, and installing the four beacons in the sign will be incidental to the contract unit price per each for "1-Section Vehicle Signal Head"

### SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

Adobe PDF submittals will be sent to the following email addresses:

Les.hermann@state.sd.us

### **GENERAL PERMANENT SIGNING**

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of sign will be as shown in the plans on page 8 or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

### **NEW PERMANENT SIGNING**

The Contractor may contact SDDOT RC Region Traffic office to obtain the design layout files for the sign. Contact information:

# Nick.wuebben@state.sd.us

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for "Extruded Aluminum Sign, Nonremovable Copy High Intensity"

### DIGITALLY PRINTED SIGNS

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

# PROTECTIVE OVERLAY FILM

Table 1.

ASTM D4956	Full Sign	Sheeting
Туре	Replacement Term	Replacement Term
	(years)	(years)
1	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		000P-471 PCN I6X2	2	9
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Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlaminate will comply with the retroreflective sheeting manufacturer's recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in

### Table 1: Retroreflective Film Minimum Durability Requirements

# **DIGITALLY PRINTED SIGNS (CONTINUED)**

# FABRICATION

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer's recommendations and the requirements of these plans.

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

# TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

# CERTIFIED DIGITAL SIGN FABRICATOR

Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

# DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs

Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.

- Name of Sign Fabricator
- Date the sign was fabricated (month and year)
- Process that was used for sign fabrication (digitally printed)
- Supplier of sheeting that was used for fabricating the sign.

2. Border date

The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8" sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



# **INSTALLATION OF OVERLAY**

Overlays will be attached to the extruded aluminum panels beginning with the pieces along the top of the sign. Fastening will proceed from the top of the overlay downward working out any bulges.

Fasteners will be aluminum rivets 5/32" in diameter. Rivets will be placed at 9" +/- 1" centers along the horizontal and vertical seams. Rivets will be placed  $\frac{1}{4"}$  to  $\frac{1}{2"}$  from the edges of the overlay pieces. Adjoining overlays will be butted tightly together before fastening begins. In addition to the perimeter rivets, fasteners are required inside the overlay spaced approximately 1' vertically and 2' horizontally from the overlay piece edges.

Prior to installing overlays, all in place extruded aluminum panels will be level and edges plumb. Post clips on the back of the sign will be tightened to the post.

All costs for leveling, plumbing and tightening will be incidental to the contract unit price per square foot for "Extruded Aluminum Sign, Nonremovable Copy High Intensity".

STATE OF	PROJECT	SHEET	TOTAL SHEETS	
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US Hwy 212 Road Closed Sign - Conduit & Wiring Details

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US Hwy 212 Road Closed Sign - Rear View



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